

**LITTLE DRY FORK
WBID 1863**

Recreational Use Attainability Analysis

May 2007

PREPARED FOR:
RFP No: B3Z07134
Water Quality Monitoring & Assessment Section
Water Protection Program
Division of Environmental Quality
MISSOURI DEPARTMENT OF NATURAL RESOURCES
301 West High Street
Jefferson City, MO 65102

PREPARED BY:
MEC WATER RESOURCES, INC.
1123 Wilkes Blvd., Ste. 400
Columbia, MO 65201

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet A - Water Body Identification

I. Water Body Information (For water body being surveyed)

Water Body Name (from USGS 7.5' quad):	Little Dry Fork
Missouri Water Body Identification (WBID) Number:	1863
8-digit HUC:	07140102
County:	phelps
Upstream Legal Description (from Table H):	8,37N, 7W
Downstream Legal Description (from Table H):	mouth
Number of sites evaluated	3
List all sites numbers, listed consequently upstream to downstream:	Site 1, Site 2, Site 3

II. Subsegmentation (fill this section out only in cases where subsegmentation is being proposed)

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Upstream Coordinates:		Downstream Coordinates:	
UTM X	Y	UTM X	Y
HORIZONTAL COLLECTION METHOD (Indicate the method used to determine the locational data.)			
Global Positioning System (GPS)		Interpolation	
Static Mode		Topographic Map or DRG	
Dynamic Mode (Kinematic)		Aerial Photograph or DOQQ	
Precise Positioning Service		Satellite Imagery	
Signal Averaging		Interpolation Other	
Real Time Differential Processing			
HORIZONTAL ACCURACY ESTIMATE			
GPS Data Quality		Interpolation Data Quality	
FOM	± _____ Meters	Source Map Scale: 1:24,000 1:100,000 Other _____	
EPE	± _____ Feet or ± _____ Meters		
PDOP		± _____ Feet or ± _____ Meters	

III. Discharger Facility Information (list all permitted dischargers on the stream)

Discharger Facility Name(s):
PCPWSO #2 Greenleaf Tract, PCPWSO #2 College H. Hs, PCPWSO #2 Pines Subd
Discharger Permit Number(s):
MO 0125211, MO 0126730, MO 0119121

IV. UAA Surveyor (please print legibly)

Name of Surveyor	Nick Muenks	Telephone Number:	573-443-4100
Organization/Employer:	MEC Water Resources		
Position:	Water Quality Scientist		

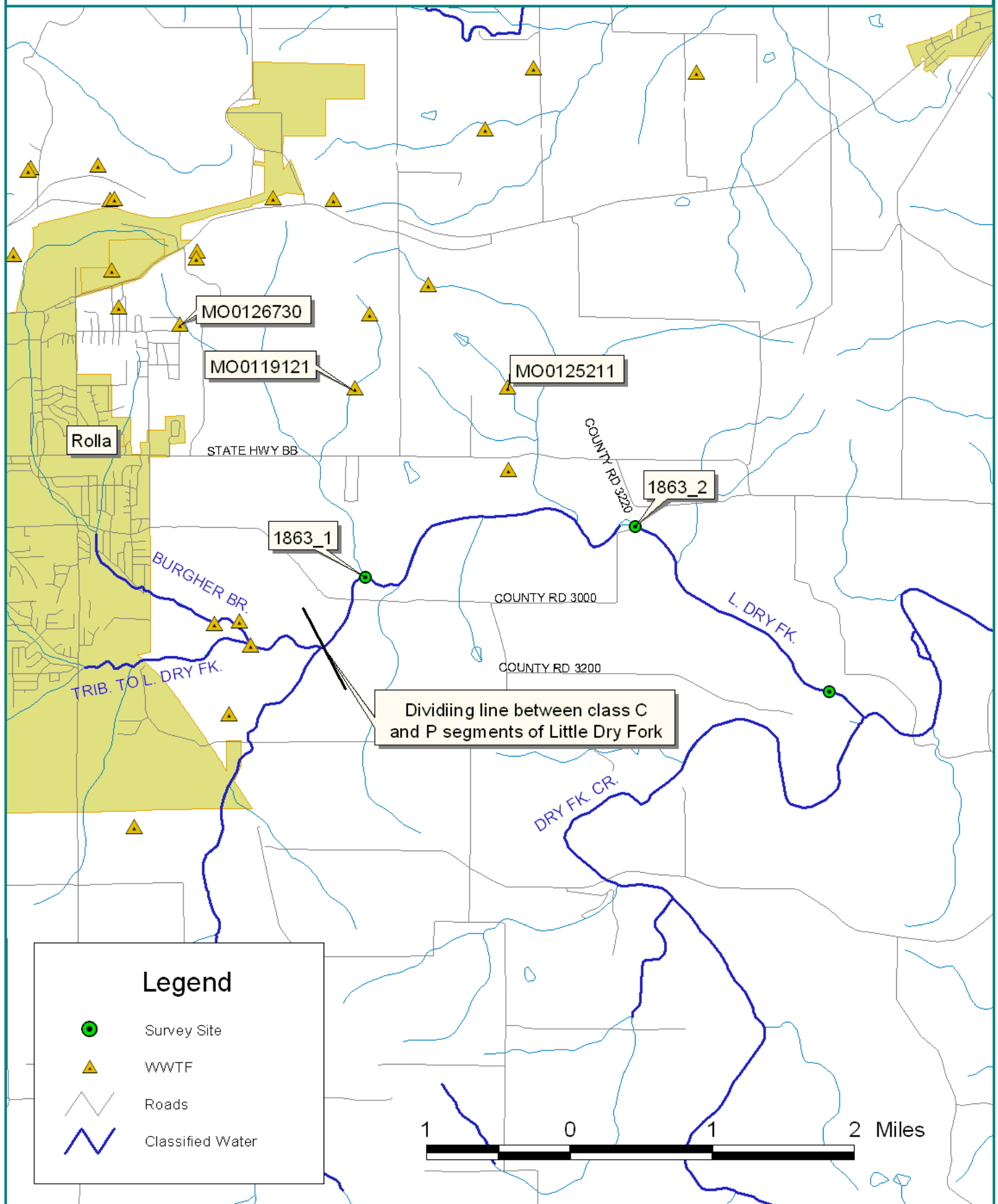
Please verify that you have completed all sections, checked all applicable boxes and that everything is complete.

Signed: Nick Muenks Date: 5/16/07

REC 5-24-07

OK 5/25/07

Little Dry Fork (1863), Length = 5.0 mi., Permit # MO0125211, MO0126730, MO0119121



WBID# 1863
 Site# 1

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(must be completed for each site)

Date & Time: <u>5/15/07</u>	Site Location Description (e.g., road crossing): <u>North of City Rd 3000 on Kirkbride property</u>
Personnel (Data Collectors): <u>Nick M, Terrad R.</u>	Facility Name: <u>PCPWS#2 - Greenleaf Treat, College Hills, Pines Subd</u>
Current Weather Conditions: <u>Cloudy/Storms Nearby</u>	Permit Number: <u>MO0625211, MO 0126730, MO 0119121</u>
Weather Conditions for Past 10 days:	
Drought Conditions?: No drought <input checked="" type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

Site Locations:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Site GPS Coordinates: UTM X: <u>0613262</u>		Y: <u>4199798</u>	
HORIZONTAL COLLECTION METHOD (Indicate the method used to determine the locational data.)			
Global Positioning System (GPS)		Interpolation	
Static Mode	<input checked="" type="checkbox"/>	Topographic Map or DRG	
Dynamic Mode (Kinematic)		Aerial Photograph or DOQQ	
Precise Positioning Service		Satellite Imagery	
Signal Averaging		Interpolation Other	
Real Time Differential Processing			
HORIZONTAL ACCURACY ESTIMATE			
GPS Data Quality		Interpolation Data Quality	
FOM	± _____ Meters	Source Map Scale: 1:24,000 1:100,000 Other _____	
EPE	± <u>22.6</u> Feet or ± _____ Meters	± _____ Feet or ± _____ Meters	
PDOP			

Photos:

Photo ID# (WBID Site# ##)	Photo Purpose and Direction (upstream, downstream, other)	Photo ID# (WBID Site# ##)	Photo Purpose and Direction (upstream, downstream, other)
<u>1863-1-684</u>	<u>Downstream from transect 1</u>	<u>1863-1-687</u>	<u>Upstream from T1</u>
<u>1863-1-685</u>	<u>Downstream from T1</u>		
<u>1863-1-686</u>	<u>Upstream from T1</u>		

Uses Observed*: (Uses actually observed at time of survey.)

<input type="checkbox"/> Swimming	<input type="checkbox"/> Skin diving	<input type="checkbox"/> SCUBA diving	<input type="checkbox"/> Tubing	<input type="checkbox"/> Water skiing
<input type="checkbox"/> Wind surfing	<input type="checkbox"/> Kayaking	<input type="checkbox"/> Boating	<input type="checkbox"/> Wading	<input type="checkbox"/> Rafting
<input type="checkbox"/> Hunting	<input type="checkbox"/> Trapping	<input type="checkbox"/> Fishing	<input checked="" type="checkbox"/> None of the above	<input type="checkbox"/> Other:
Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use Data Sheet D- Recreational Use Interview when conducting interviews.)				

Surrounding Conditions*: (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

<input type="checkbox"/> City/county parks	<input type="checkbox"/> Playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input type="checkbox"/> Campgrounds
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input type="checkbox"/> No trespass sign	<input type="checkbox"/> Fence	<input type="checkbox"/> Steep slopes	<input checked="" type="checkbox"/> None of the above	<input type="checkbox"/> Other:
Comments: <u>A Site is downstream of City Rd 3000 crossing (west crossing) reach segment accessible only through private property</u>				

WBID# 1863
Site# 1

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization
(must be completed for each site)

Indications of Human Use*: (attach photos)

<input type="checkbox"/> Roads	<input type="checkbox"/> Rope swings	<input type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Livestock Watering	<input type="checkbox"/> RV / ATV Tracks
<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle	<input type="checkbox"/> Other:	
Comments:					

Stream Morphology:

Upstream View's Physical Descriptions: Is there any water present at this view? ☒ Yes ☐ No

If so, is there an obvious current? ☒ Yes ☐ No

Select one of the following channel features:

Channel Feature	Transect (#)	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE			30			
RUN			20			
POOL			50			

Downstream View's Physical Descriptions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

Substrate*: (These values should add up to 100%.)

25	% Cobble	5	% Gravel	0	% Sand	0	% Silt	0	% Mud/Clay	70	% Bedrock
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Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site.)

Substrate covered with filamentous algae

Water Characteristics*: (Mark all that apply.)

ODOR:	<input checked="" type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input type="checkbox"/> None	<input type="checkbox"/> Other:
COLOR:	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Green	<input type="checkbox"/> Gray	<input type="checkbox"/> Milky	<input type="checkbox"/> Other:
BOTTOM DEPOSIT:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input checked="" type="checkbox"/> Fine sediments	<input type="checkbox"/> None	<input type="checkbox"/> Other:
WATER SURFACE DEPOSITION:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:

Comments: Please attach any additional comments to this form.

*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that affect another use.

Please verify that you have completed all sections, checked all applicable boxes and that everything is complete.

Surveyor's Signature: Nick Muench Date of Survey: 5/15/07
Organization: MEL Water Resources Position: Water Quality Scientist

MEC Recreational Use Attainability Analysis Field Survey Sheet

Waterbody ID: <u>1863</u>	Site #: <u>1</u> (WBID_Site#)	Dissolved Oxygen Date: <u>5/15/07</u> Time: <u>1145</u>
Estimated Channel Incision: <u>0.15</u> (m) (height between low bank width and water)		Dissolved Oxygen: <u>8.63</u> (mg/L)
GPS Location (taken at transect 1): UTM X: <u>0613262</u> UTM Y: <u>499798</u>		Dissolved Oxygen: <u>97.3</u> (% sat)
Horizontal Accuracy Estimate (GPS Data Quality): +/- <u>22.6</u> (feet)		Specific Cond: <u>797.0</u> ($\mu\text{S/cm}$)
Average Stream Width: <u>15</u> (meters)	Length of Survey Segment: <u>300</u> (meters) (20x average stream width)	Water Temperature: <u>21.4</u> ($^{\circ}\text{C}$)
Field Staff: <u>Nick Muenks Jerrod Roberts</u>		

Transect Cross-Section

Measurement	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)
1	2.00	0.10	0.00	0.17	0.20	0.10	0.20	0.10	2.30	0.10	0.30	0.13	0.50	0.10	0.10	0.10	0.00	0.20	2.40	0.11	1.30	0.12
2	2.95	0.10	0.65	0.15	1.50	0.15	1.70	0.40	2.30	0.30	1.90	0.60	1.20	0.11	1.08	0.19	0.92	0.40	3.13	0.19	2.25	0.33
3	3.90	0.14	1.30	0.12	2.80	0.13	3.20	0.40	4.30	0.30	3.50	0.82	1.90	0.13	2.06	0.25	1.84	0.10	3.86	0.27	3.20	0.58
4	4.85	0.23	1.95	0.10	4.10	0.13	4.70	0.40	6.30	0.30	5.10	0.97	2.60	0.16	3.04	0.31	2.76	0.10	4.59	0.40	4.15	0.56
5	5.80	0.23	2.60	0.10	5.40	0.14	6.20	0.62	8.30	0.23	6.70	0.98	3.30	0.10	4.02	0.39	3.68	0.10	5.32	0.59	5.10	0.55
6	6.75	0.23	3.25	0.11	6.70	0.20	7.70	0.38	10.30	0.20	8.30	0.83	4.00	0.18	5.00	0.57	4.60	0.00	6.05	0.67	6.05	0.59
7	7.70	0.30	3.90	0.12	8.00	0.13	9.20	0.29	12.30	0.19	9.90	0.80	4.70	0.15	5.98	0.35	5.52	0.10	6.78	0.67	7.00	0.53
8	8.65	0.31	4.55	0.16	9.30	0.13	10.70	0.39	14.30	0.15	11.50	0.80	5.40	0.17	6.96	0.20	6.44	0.10	7.51	0.68	7.95	0.60
9	9.60	0.29	5.20	0.10	10.60	0.15	12.20	0.35	16.30	0.19	13.10	0.47	6.10	0.10	7.94	0.22	7.36	0.13	8.24	0.69	8.90	0.53
10	10.55	0.20	5.85	0.10	11.90	0.15	13.70	0.35	18.30	0.19	14.70	0.29	6.80	0.12	8.92	0.23	8.28	0.10	8.97	0.44	9.85	0.46
11	11.50	0.10	6.50	0.10	13.20	0.13	15.2	0.11	20.30	0.10	16.30	0.11	7.50	0.10	9.90	0.13	9.20	0.15	9.70	0.10	10.80	0.11
12	12.10	0	12.00	0	18.70	0	15.5	0	21.40	0	16.40	0	10.00	0	10.50	0	12.70	0	10.50	0	11.20	0
Feature Type (riffle, run, or pool)	run		run		riffle		pool		pool		pool		riffle		run		riffle		pool		pool	

Notes: Transects will be measured beginning on left descending bank and finishing on right descending bank.

GPS location corresponds to Transect 01. Transects ordered in upstream to downstream order.

Transects in order of up to downstream.

Mark dry depth measurements as 0; measurements less than 0.1m as <0.1; and greater than 1m as >1

Measurement 1 depth = 0.1m (unless depth is insufficient); Measurement 11 depth = 0.1m (unless depth is insufficient); Measurement 12 distance = entire wetted width distance and depth = 0m.

Signed: Nick Muench Date: 5/15/07

RUC 5-24-07 JAK 5/28/07

WBID# 1863
Site# 2

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization (must be completed for each site)

Date & Time: <u>5/16/07 645</u>	Site Location Description (e.g., road crossing): <u>Downstream of City Rd 3000 crossing</u>
Personnel (Data Collectors): <u>Nick M. Jacob R.</u>	
Current Weather Conditions: <u>Clear</u>	Facility Name: <u>RPWSD #2 - Greenleaf Treat, College Hills, Pines Subd</u>
	Permit Number: <u>MO 0125211, MO 0126730, MO 0119121</u>
Weather Conditions for Past 10 days:	
Drought Conditions?: No drought <input checked="" type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

Site Locations:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Site GPS Coordinates: UTM X: <u>0616305</u>		Y: <u>4200370</u>	
HORIZONTAL COLLECTION METHOD (Indicate the method used to determine the locational data.)			
Global Positioning System (GPS)		Interpolation	
Static Mode	<input checked="" type="checkbox"/>	Topographic Map or DRG	
Dynamic Mode (Kinematic)		Aerial Photograph or DOQQ	
Precise Positioning Service		Satellite Imagery	
Signal Averaging		Interpolation Other	
Real Time Differential Processing			
HORIZONTAL ACCURACY ESTIMATE			
GPS Data Quality		Interpolation Data Quality	
FOM	± _____ Meters	Source Map Scale: 1:24,000 1:100,000 Other _____	
EPE	± <u>25.5</u> Feet or ± _____ Meters	± _____ Feet or ± _____ Meters	
PDOP			

Photos:

Photo ID# (WBID Site# #)	Photo Purpose and Direction (upstream, downstream, other)	Photo ID# (WBID Site# #)	Photo Purpose and Direction (upstream, downstream, other)
<u>1863-2-688</u>	<u>City Rd 3000 crossing w/ graffiti.</u>	<u>1863-2-693</u>	<u>Upstream view at transect 7</u>
<u>1863-2-689</u>	<u>Foot path along stream North of rd</u>	<u>1863-2-694</u>	<u>rafts and tubes on bank near transect 7</u>
<u>1863-2-690</u>	<u>five tracks on gravel bar upstream of rd</u>	<u>1863-2-695</u>	<u>Downstream view of T7</u>
<u>1863-2-691</u>	<u>Downstream from rd crossing</u>	<u>1863-2-700</u>	<u>Foot prints on gravel bar near transect 9</u>
<u>1863-2-692</u>	<u>Upstream view at transect 7</u>	<u>1863-2-701</u>	<u>Shirt and aluminum can on bank near transect 9</u>
		<u>1863-2-702</u>	<u>shirt and aluminum on bank near transect 9</u>

Uses Observed*: (Uses actually observed at time of survey.) 1863-2-705 foot prints at transect 11

<input type="checkbox"/> Swimming	<input type="checkbox"/> Skin diving	<input type="checkbox"/> SCUBA diving	<input type="checkbox"/> Tubing	<input type="checkbox"/> Water skiing
<input type="checkbox"/> Wind surfing	<input type="checkbox"/> Kayaking	<input type="checkbox"/> Boating	<input type="checkbox"/> Wading	<input type="checkbox"/> Rafting
<input type="checkbox"/> Hunting	<input type="checkbox"/> Trapping	<input type="checkbox"/> Fishing	<input checked="" type="checkbox"/> None of the above	<input type="checkbox"/> Other:

Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use Data Sheet D- Recreational Use Interview when conducting interviews.)

Surrounding Conditions*: (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

<input type="checkbox"/> City/county parks	<input type="checkbox"/> Playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input type="checkbox"/> Campgrounds
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input type="checkbox"/> No trespass sign	<input type="checkbox"/> Fence	<input type="checkbox"/> Steep slopes	<input checked="" type="checkbox"/> None of the above	<input type="checkbox"/> Other:

Comments:

WBID# 1863
Site# 2

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(must be completed for each site)

Indications of Human Use*: (attach photos)

<input type="checkbox"/> Roads	<input type="checkbox"/> Rope swings	<input checked="" type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Livestock Watering	<input type="checkbox"/> RV / ATV Tracks
<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle	<input checked="" type="checkbox"/> Other:	
Comments: <u>raft and inner tubes on bank</u>					

Stream Morphology:

Upstream View's Physical Descriptions: Is there any water present at this view? ☒ Yes ☐ No

If so, is there an obvious current? ☒ Yes ☐ No

Select one of the following channel features:

Channel Feature	Transect (#)	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE			<u>35</u>			
RUN			<u>20</u>			
POOL			<u>45</u>			

Downstream View's Physical Descriptions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

Substrate*: (These values should add up to 100%.)

<u>40</u> % Cobble	<u>50</u> % Gravel	<u>5</u> % Sand	<u>0</u> % Silt	<u>5</u> % Mud/Clay	<u>0</u> % Bedrock
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Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site.)

80% of substrate with algae in upstream part of site, 20% in the last half

Water Characteristics*: (Mark all that apply.)

ODOR:	<input checked="" type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input type="checkbox"/> None	<input type="checkbox"/> Other:
COLOR:	<input type="checkbox"/> Clear	<input type="checkbox"/> Green	<input checked="" type="checkbox"/> Gray	<input type="checkbox"/> Milky	<input checked="" type="checkbox"/> Other: <u>run off influence from previous day's rain</u>
BOTTOM DEPOSIT:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input type="checkbox"/> Fine sediments	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
WATER SURFACE DEPOSITION:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:

Comments: Please attach any additional comments to this form.

*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that affect another use.

Please verify that you have completed all sections, checked all applicable boxes and that everything is complete.

Surveyor's Signature: Nick Muench Date of Survey: 5/16/07

Organization: MEC Water Resources Position: Water Quality Scientist

MEC Recreational Use Attainability Analysis Field Survey Sheet

Waterbody ID: <u>1863</u>		Site #: <u>2</u> <small>(WBID_Site#)</small>		Dissolved Oxygen	
Estimated Channel Incision: <u>0.15</u> <u>0.25</u> (m) (height between low bank width and water)				Date: <u>5/16/07</u>	Time: <u>645</u>
GPS Location (taken at transect 1):				Dissolved Oxygen: <u>5.53</u> (mg/L)	
UTM X: <u>0616305</u>		UTM Y: <u>4200370</u>		Dissolved Oxygen: <u>57.3</u> (% sat)	
Horizontal Accuracy Estimate (GPS Data Quality): +/- <u>25.5</u> (feet)				Specific Cond: <u>490.3</u> ($\mu\text{S/cm}$)	
Average Stream Width: <u>21</u> (meters)	Length of Survey Segment: <u>300</u> (meters)	Water Temperature: <u>17.0</u> ($^{\circ}\text{C}$)			
Field Staff: <u>Nick Muenks</u> <u>Jerrold Roberts</u>					

Transect Cross-Section

Measurement	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)
1	0.00	0.10	1.00	0.10	0.00	0.24	0.20	0.11	0.70	0.10	0.80	0.10	0.50	0.10	0.40	0.10	0.00	0.28	0.00	0.18	0.00	0.13
2	1.60	0.56	3.10	0.12	2.00	0.43	2.10	0.11	2.45	0.10	2.30	0.23	2.40	0.20	2.40	0.12	2.05	0.30	1.20	0.37	2.02	0.49
3	3.20	0.92	5.20	0.13	4.00	0.37	4.00	0.14	4.20	0.19	3.80	0.37	4.30	0.30	4.40	0.14	4.10	0.90	2.40	0.80	4.04	0.63
4	4.80	0.68	7.30	0.10	6.00	0.32	5.90	0.18	5.95	0.22	5.30	0.54	6.20	0.30	6.40	0.14	6.15	0.87	3.60	0.66	6.06	0.54
5	6.40	0.73	9.40	0.00	8.00	0.24	7.80	0.18	7.70	0.27	6.80	0.72	8.10	0.32	8.40	0.10	8.20	2.10	4.80	0.90	8.08	0.52
6	8.00	0.99	11.50	0.00	10.00	0.10	9.70	0.18	9.45	0.47	8.30	0.68	10.00	0.36	10.40	0.12	10.25	0.80	6.00	2.10	10.10	0.20
7	9.60	0.96	13.60	0.30	12.00	0.14	11.60	0.15	11.20	0.90	9.80	0.62	11.90	0.34	12.40	0.10	12.30	0.56	7.20	1.0	12.12	0.14
8	11.20	0.87	15.70	0.50	14.00	0.24	13.50	0.17	12.95	0.80	11.30	0.59	13.80	0.36	14.40	0.12	14.35	0.33	8.40	0.82	14.14	0.26
9	12.80	2.10	17.80	0.45	16.00	0.33	15.40	0.19	14.70	0.83	12.80	0.66	15.80	0.23	16.40	0.12	16.40	0.19	9.60	0.60	16.16	0.22
10	14.40	0.90	19.90	0.44	18.00	0.35	17.30	0.17	16.45	0.80	14.30	0.69	17.60	0.32	18.40	0.14	18.45	0.18	10.80	0.29	18.18	0.24
11	16.00	0.15	22.00	0.11	20.00	0.11	19.20	0.11	18.20	0.17	15.80	0.22	19.50	0.11	20.40	0.11	20.50	0.29	12.00	0.11	20.20	0.10
12			22.20	0	20.10	0	19.30	0	1				19.90	0	20.80	0			12.50	0	21.00	0
Feature Type (riffle, run, or pool)	pool		riffle/pool		run/riffle/pool		riffle		pool		pool		pool		riffle		pool		pool		pool	

Notes: Transects will be measured beginning on left descending bank and finishing on right descending bank.

GPS location corresponds to Transect 01. Transects ordered in upstream to downstream order.

Transects in order of up to downstream.

Mark dry depth measurements as 0; measurements less than 0.1m as <0.1; and greater than 1m as >1

Measurement 1 depth = 0.1m (unless depth is insufficient); Measurement 11 depth = 0.1m (unless depth is insufficient); Measurement 12 distance = entire wetted width distance and depth = 0m.

Signed: Nick Muench Date: 5/16/07
 ORC 5-24-07 JAK 5/25/07

WBID# 1863
 Site# 3

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(must be completed for each site)

Date & Time: <u>5/16/07 9:15</u>	Site Location Description (e.g., road crossing): <u>On property at the end of Co. Rd. 3200 just upstream of confluence with Big Dry Fork</u>
Personnel (Data Collectors): <u>Nick M., Terrod R.</u>	Facility Name: <u>PCPWS, #2 At Greenleaf Tract, College Hills, Pines Subd</u>
Current Weather Conditions: <u>Clear</u>	Permit Number: <u>MO 0125211, MO 0126730, MO 0119121</u>
Weather Conditions for Past 10 days:	
Drought Conditions?: No drought <input checked="" type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

Site Locations:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)	
Site GPS Coordinates: UTM X: <u>6618496</u>	Y: <u>4198505</u>
HORIZONTAL COLLECTION METHOD (Indicate the method used to determine the locational data.)	
Global Positioning System (GPS)	Interpolation
Static Mode <input checked="" type="checkbox"/>	Topographic Map or DRG
Dynamic Mode (Kinematic)	Aerial Photograph or DOQQ
Precise Positioning Service	Satellite Imagery
Signal Averaging	Interpolation Other
Real Time Differential Processing	
HORIZONTAL ACCURACY ESTIMATE	
GPS Data Quality	Interpolation Data Quality
FOM ± _____ Meters	Source Map Scale: 1:24,000 1:100,000 Other _____
EPE ± <u>21.2</u> Feet or ± _____ Meters	± _____ Feet or ± _____ Meters
PDOP	

Photos:

Photo ID# (WBID Site# #)	Photo Purpose and Direction (upstream, downstream, other)	Photo ID# (WBID Site# #)	Photo Purpose and Direction (upstream, downstream, other)
<u>1863-3-707</u>	<u>Tracks (vehicle) in stream</u>	<u>1863-3-701</u>	<u>Transect 9</u>
<u>1863-3-708</u>	<u>Downstream view from T5</u>	<u>1863-3-712</u>	<u>Downstream from Transect 9</u>
<u>1863-3-709</u>	<u>Upstream view from T5</u>		
<u>1863-3-710</u>	<u>Transect 9</u>		

Uses Observed*: (Uses actually observed at time of survey.)

<input type="checkbox"/> Swimming	<input type="checkbox"/> Skin diving	<input type="checkbox"/> SCUBA diving	<input type="checkbox"/> Tubing	<input type="checkbox"/> Water skiing
<input type="checkbox"/> Wind surfing	<input type="checkbox"/> Kayaking	<input type="checkbox"/> Boating	<input type="checkbox"/> Wading	<input type="checkbox"/> Rafting
<input type="checkbox"/> Hunting	<input type="checkbox"/> Trapping	<input type="checkbox"/> Fishing	<input checked="" type="checkbox"/> None of the above	<input type="checkbox"/> Other:

Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use Data Sheet D- Recreational Use Interview when conducting interviews.) Property owner stated that he and his family have used the stream for swimming and there was a spot over his head → Transect 9
- Chris & Mary Threadgill

Surrounding Conditions*: (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

<input type="checkbox"/> City/county parks	<input type="checkbox"/> Playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input type="checkbox"/> Campgrounds
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input type="checkbox"/> No trespass sign	<input type="checkbox"/> Fence	<input type="checkbox"/> Steep slopes	<input checked="" type="checkbox"/> None of the above	<input type="checkbox"/> Other:

Comments: Section of stream visited was within private property and not accessible except via the ~~stream~~ Big Dry Fork

WBID# 1863
Site# 3

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(must be completed for each site)

Indications of Human Use*: (attach photos)

<input checked="" type="checkbox"/> Roads	<input type="checkbox"/> Rope swings	<input checked="" type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Livestock Watering	<input type="checkbox"/> RV / ATV Tracks
<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle	<input type="checkbox"/> Other:	
Comments:					

Stream Morphology:

Upstream View's Physical Descriptions: Is there any water present at this view? ☒ Yes ☐ No

If so, is there an obvious current? ☒ Yes ☐ No

Select one of the following channel features:

Channel Feature	Transect (#)	Distance from access (m)	Width (m) %	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE			20			
RUN			40			
POOL			40			

Downstream View's Physical Descriptions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

Substrate*: (These values should add up to 100%.)

<u>15</u> % Cobble	<u>70</u> % Gravel	<u>5</u> % Sand	<u>0</u> % Silt	<u>10</u> % Mud/Clay	<u>0</u> % Bedrock
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Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site.)

approximately 20% of substrate with algal growth

Water Characteristics*: (Mark all that apply.)

ODOR:	<input checked="" type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input type="checkbox"/> None	<input type="checkbox"/> Other:
COLOR:	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Green	<input type="checkbox"/> Gray	<input type="checkbox"/> Milky	<input type="checkbox"/> Other:
BOTTOM DEPOSIT:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input type="checkbox"/> Fine sediments	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
WATER SURFACE DEPOSITION:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:

Comments: Please attach any additional comments to this form.

*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that affect another use.

Please verify that you have completed all sections, checked all applicable boxes and that everything is complete.

Surveyor's Signature: Nick Muent Date of Survey: 5/16/07

Organization: MEC Water Resources Position: Water Quality Scientist

MEC Recreational Use Attainability Analysis Field Survey Sheet

Waterbody ID: <u>1863</u> Site #: <u>4^{un} 3</u> (WBID_Site#)		Dissolved Oxygen Date: <u>5-16-07</u> Time: <u>9:15</u>	
Estimated Channel Incision: <u>0.10</u> (m) (height between low bank width and water)		Dissolved Oxygen: <u>7.13</u> (mg/L)	
GPS Location (taken at transect 1): UTM X: <u>06184916</u> UTM Y: <u>4198505</u>		Dissolved Oxygen: <u>74.6</u> (% sat)	
Horizontal Accuracy Estimate (GPS Data Quality): <u>+/- 21.2</u> (feet)		Specific Cond: <u>515.0</u> (µS/cm)	
Average Stream Width: <u>14.5</u> (meters) Length of Survey Segment: <u>300</u> (meters) (20x average stream width)		Water Temperature: <u>17.3</u> (°C)	
Field Staff: <u>Nick Muenks Jerrad Roberts</u>			

Transect Cross-Section

Measurement	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)
1	0.00	0.10	3.40	0.10	0.50	0.11	0.00	0.12	0.00	0.11	0.70	0.10	0.00	0.18	3.80	0.11	0.00	0.10	0.10	0.11	0.20	0.11
2	1.70	<0.10	4.40	<0.10	1.98	<0.10	1.00	0.52	1.02	0.43	1.63	0.18	1.05	0.31	4.30	0.15	1.00	0.26	2.25	0.90	1.68	0.26
3	3.40	<0.10	5.40	0.10	3.46	<0.10	2.00	0.70	2.04	0.60	2.56	0.33	2.10	0.26	4.80	0.22	2.00	0.49	4.40	0.65	3.16	0.32
4	5.10	0.10	6.40	<0.10	4.94	<0.10	3.00	>1.0	3.06	0.66	3.49	0.60	3.15	0.26	5.30	0.30	3.00	0.70	6.55	0.66	4.64	0.44
5	6.80	0.12	7.40	0.18	6.42	0.13	4.00	>1.0	4.08	0.58	4.42	0.58	4.20	0.30	5.80	0.41	4.00	0.91	8.20	0.35	6.12	0.31
6	8.50	0.16	8.40	0.19	7.90	0.12	5.00	0.93	5.10	0.55	5.35	0.50	5.25	0.31	6.30	0.50	5.00	>1.0	10.85	0.30	7.60	0.20
7	10.20	0.16	9.40	0.25	9.38	0.15	6.00	0.70	6.12	0.49	6.28	0.43	6.30	0.31	6.80	0.57	6.00	>1.0	13.00	0.17	9.08	0.24
8	11.90	0.11	10.40	0.23	10.86	0.17	7.00	0.50	7.14	0.40	7.21	0.33	7.35	0.25	7.30	0.50	7.00	>1.0	15.15	<0.10	10.56	0.13
9	13.60	0.10	11.40	0.22	12.34	0.18	8.00	0.32	8.16	0.31	8.14	0.36	8.40	0.20	8.780	0.38	8.00	>1.0	17.30	<0.10	12.04	<0.10
10	15.30	<0.10	12.40	0.18	13.82	0.18	9.00	0.20	9.18	0.20	9.07	0.16	9.45	0.13	8.30	0.30	9.00	>1.0	19.45	0.20	13.52	<0.10
11	17.00	0.10	13.40	0.11	15.30	0.10	10.00	0.10	10.20	0.11	10.00	0.10	10.50	0.11	8.80	0.17	10.00	>1.0	21.60	0.11	15.00	0.10
12	20.70	0	13.80	0	15.60	0	10.70	0	11.40	0	10.90	0	13.70	0	9.00	0			22.10	0	15.60	0
Feature Type (riffle, run, or pool)	3 ³⁰ riffle		4 ³⁰ riffle/run		3 ³⁰ riffle		7 ³⁰ pool		14 ³⁰ run		9 ³⁰ run		32 ³⁰ run		20 ³⁰ run		50 ³⁰ pool		60 ³⁰ run/pool		60 ³⁰ run	

Notes: Transects will be measured beginning on left descending bank and finishing on right descending bank.

GPS location corresponds to Transect 01. Transects ordered in upstream to downstream order.

Transects in order of up to downstream.

Mark dry depth measurements as 0; measurements less than 0.1m as <0.1; and greater than 1m as >1

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Signed: Nick Muench Date: 5/16/07
ORCA 5-24-07 AK 5/25/07

WBID# 1863



Site# 1 Photo ID# 1863-1-684, Downstream T1



Site# 1 Photo ID# 1863-1-685, Downstream T1



Site# 1 Photo ID# 1863-1-686, Upstream T1



Site# 1 Photo ID# 1863-1-687, Upstream T11

WBID# 1863



Site# 2 Photo ID# 1863-2-688, Crossing w/ graffiti



Site# 2 Photo ID# 1863-2-689, Footpath



Site# 2 Photo ID# 1863-2-690, Tire tracks



Site# 2 Photo ID# 1863-2-691, Downstream

WBID# 1863



Site# 2 Photo ID# 1863-2-692, Upstream



Site# 2 Photo ID# 1863-2-693, Upstream



Site# 2 Photo ID# 1863-2-694, Rafts and tubes



Site# 2 Photo ID# 1863-2-695, Downstream

WBID# 1863



Site# 2 Photo ID# 1863-2-700, Footprints



Site# 2 Photo ID# 1863-2-701, Shirt and aluminum can



Site# 2 Photo ID# 1863-2-702, Shirt and aluminum



Site# 2 Photo ID# 1863-2-705, Footprints

WBID# 1863



Site# 3 Photo ID# 1863-3-707, Rafts and tubes



Site# 3 Photo ID# 1863-3-708, Downstream

WBID# 1863



Site# 3 Photo ID# 1863-3-709, Upstream



Site# 3 Photo ID# 1863-3-710, Transect 9



Site# 3 Photo ID# 1863-3-711, Transect 9



Site# 3 Photo ID# 1863-3-712, Downstream